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FILE

MAR 13 1991

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554Federal Communications Commission
Office of the Secretary

In the Matter of)
)
Amendment Of Subpart L of)
Part 90 Of The)
Commission's Rules) FCC File No. _____
To Permit Trunked Operation)
Of Stations Operating In The)
470-512 MHz Band)

To: The Commission

PETITION FOR RULE MAKING

JAMES A. KAY, JR.

Dennis C. Brown,
His AttorneyBrown and Schwaninger
1919 Pennsylvania Avenue, N.W.
Suite 504
Washington, D.C. 20006
202/223-8837

Dated: March 13, 1991

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Summary Of The Filing

James A. Kay, Jr. respectfully requests that the Commission initiate a rule making proceeding looking toward amendment of its Part 90, Subpart L Rules to permit trunked operation of channels in the 470-512 MHz band. The spectrum efficiency and administrative efficiency of trunked radio system operation are well known and these efficiencies should be obtained from the channels allocated under Subpart L.

The Commission's successful Subpart S Rules provide the basis for the rule amendments which Kay suggests. Although trunked operation above 800 MHz is based on an assumption that a system has exclusive use of a channel, Kay suggests rule amendments to facilitate trunked operation on 470-512 MHz band channels which are shared by more than one base station.

Kay suggests that the Commission continue to apply the fleet licensing plan to trunked systems which it currently applies to two-way private carrier stations in the band. Kay shows that the administrative convenience which the Commission derives from fleet licensing and from frequency coordination in the band should continue to be enjoyed when it authorized trunked operation.

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To: The Commission

PETITION FOR RULE MAKING

James A. Kay, Jr. (Kay), by his attorneys, hereby respectfully requests that the Commission initiate a rule making proceeding looking toward amendment of Subpart L of its Part 90 Rules to allow trunked operation of stations authorized to operate in the 470-512 MHz band. In support of his position, Kay shows the following.

Trunked Operation Is Spectrum Efficient

The efficiency of automatically trunked operation of a radio system is well known.¹ Although the Federal Government has underway a project to determine how much spectrum might be reallocated to civilian use, until that proceeding is terminated,

¹ See, e.g., Report and Order in P.R. Docket No. 87-213 (FCC 90-234 Released July 2, 1990).

trunked operation of existing conventional channels provides the best opportunity for increasing the efficiency of the private land mobile spectrum.

When only one channel is available to an end user, the end user must wait until the channel becomes clear before attempting to use it. When the channel becomes clear, there will usually be a delay before end users desiring the channel can react and attempt to transmit. There may be a period of contention for access, which can continue until some end user prevails.² During the period of delayed reaction and contention, no actual use is made of the channel. Alternatively, no end user which is equipped with the channel may desire to use it for a period of time, while other, similar channels are congested and have end users whose demands cannot be served. This wait-monitor-race to grab the channel is a highly inefficient use of the scarce and valuable spectrum.

When multiple channels are available to an end user, but the end user must manually rotate among them seeking an open channel, substantial inefficiencies can accumulate. Not only may potential use of a channel be wasted before a hunting end user finds a clear channel and begins to transmit, but manual methods

² This period of delay and contention can occur among mobile units of a single entity which has exclusive use of a channel, as well occurring among unrelated persons sharing use of a community repeater.

of channel searching and selection are an inefficient and potentially dangerous use of the end user's time. Indeed, the manipulations involved in manually selecting a channel may create a safety hazard by distracting an end user from giving full attention to the task of driving a vehicle or operating industrial machinery.

In contrast to conventional stations, trunked systems provide end users with a group of channels, improving the chance that they will avoid contention and receive immediate service. Less complex trunked systems rapidly assign units to channels as the channels become available. More complex trunked systems can also maintain queues of end users waiting for service, thereby allowing end users to devote their full attention to higher priority activities while they wait.

The Commission's Subpart S Rules which govern operation of trunked stations in the frequency bands above 800 MHz provide a tested and appropriate format for the amendments to Subpart L which will be required to allow trunked operation in the 470-512 MHz band. The experience which the Commission has acquired in administering both Subpart S and Subpart L systems should allow the administration of trunked systems in the 470-512 MHz band to proceed with clarity and certainty.

For all the foregoing reasons, but most emphatically, for the protection of the lives and property of persons sharing urban streets and expressways, trunked operation of radio channels should be strongly preferred over conventional operation. Accordingly, Kay respectfully requests that the Commission initiate a rule making proceeding looking toward adoption of rules to facilitate trunked operation of private land mobile stations in the band between 470 and 512 MHz in the urban areas in which the frequencies are allocated.³

Trunked Operation On Shared Channels

Review of the Commission's frequency record files indicates a significant number of licensees or community repeater operators who have exclusive use of at least two channels in the band. Kay has not reviewed the Commission's records for all of the urban areas in which the band is allocated, however, a cursory view of the Commission's records for the Los Angeles, California, area, shows that at least four persons have exclusive use of at least two co-located channels.⁴ Kay believes that it is reasonable to

³ Channels in the band 421-430 MHz are allocated for use in the Cleveland and Detroit areas under rules similar to those of Subpart L. Solely for clarity of expression, Kay has limited his discussion herein to the 470-512 MHz band. The Commission may desire to propose rules similar to those suggested herein for trunked operation in the 421-430 MHz band in the Cleveland and the Detroit areas.

⁴ For this purpose, Kay credits the operator of a community repeater which has the level of loading required to retain exclusive use of the channel as having exclusive use of the channel.

assume that private carrier or community repeater operators would also have exclusive use of channels in the other urban areas in which the band is allocated. Accordingly, it appears that significant increases in spectrum efficiency could be enjoyed at once by allowing trunked operation in the band.

The four major methods of trunked operation used above 800 MHz rely on exclusive use of the channels by a single station within an operating area.⁵ While trunked operation is most obviously practical using frequencies which are exclusively assigned to a single licensee, it is certainly possible to devise a trunked system which will not cause harmful interference to persons sharing use of one or more of the trunked channels.⁶

Carried over into the Subpart S Rules ever since the initial 800 MHz band Rules is Rule Section 90.607(d), which requires the submission of an explanation of how a proposed trunked system

⁵ The four major methods are those devised by Motorola, E.F. Johnson, General Electric, and AT&T (Improved Mobile Telephone Service).

⁶ Such methods would rely on automatic channel monitoring before transmitting, a mode of channel sharing recognized by the Commission's Rules, see, 47 C.F.R. §90.403(e). Such a system could dedicate one exclusive-use channel to control data and dedicate shared channels to working channels. Alternatively, such a system could operate with all channels shared with other stations, provided that control data was sent on working channels, rather than on a dedicated channel, for example, by subaudible data or superaudible tone signalling.

will operate. The Commission's Advanced Systems Unit has more than a decade of experience in reviewing trunked system applications. The Commission also has extensive experience in assigning frequencies on a case-by-case basis, in conformity to codified rules, for example, in the 800 MHz band in the Northern California area. This experience suggests that no undue burden should be imposed on the Commission in reviewing an application which explains how a proposed system will avoid causing harmful interference to other stations which are authorized to share the channels. Accordingly, Kay suggests that the Commission amend its Rules to allow a person to operate shared channels in the 470-512 MHz band on a trunked basis, provided only that the applicant makes a satisfactory showing of how it will prevent harmful interference to existing stations sharing the channels. At the Appendix, suggested Rule Section 90.316 defines the interference protection to be provided to and from trunked systems.

Providing Interference Protection

The Subpart S Rules provide a basis upon which the Commission can both facilitate the migration of Subpart L channels to trunked operation and regulate trunked systems with a high degree of administrative efficiency. If an operator is willing to make the investment necessary to use the spectrum with the greater efficiency which trunked operation provides, the

Commission should be willing to give that person the measure of protection against harmful interference which that investment justifies. Fortuitously, providing the requisite degree of interference protection will also result in essentially the same degree of administrative efficiency which the Commission has enjoyed with respect to trunked systems above 800 MHz.

The Commission should define the protected area of a trunked system generally in accord with the method set forth in Subpart S of the Rules. That is, if a station has exclusive use of a frequency within at least a 70 mile radius, upon commencement of trunked operation the station should be protected against the licensing of new or relocated transmitters within a 70 mile radius of the station. A trunked system which has exclusive use of a channel for a radius of between 40 and 70 miles should be protected against new or relocated stations such that its 30 dBμ contour is not crossed by any other station's 40 dBμ contour, when drawn by the method prescribed by the Commission's Rules.

A trunked system located at Mt. Wilson, Mt. Lukens, Santiago Peak, Sierra Peak or certain other exceptionally high sites in the Los Angeles area, operating on a channel of which it has exclusive use, should be protected against any new or relocated station within a radius of 105 miles. Adoption of the suggested rule can allow the Commission to provide the trunked system operator with the requisite degree of protection against

interference, and make the administration of licensing readily manageable within the Commission's scarce resources.

A trunked system operating on a channel which it shares with one or more other facilities would, in general, be provided exclusive use of the channel as set forth above, subject to operating on a non-interference basis with existing co-channel stations. A conventional station sharing a channel with a trunked system would be permitted to modify its operation, provided that the modification would not increase the threat of harmful interference to the trunked system, nor cause the trunked system any greater burden in protecting the modified station against interference.⁷

Eligibility For Trunked Operation

The Commission should take one additional step to facilitate the migration of Subpart L channels to trunked operation. Kay proposes that the Commission allow a channel to be merged into a trunked system and to receive co-channel protection at a time when the channel is not fully loaded.

⁷ For example, a conventional station licensee could reduce height or power or move further away from the trunked station. The conventional station licensee could not increase height or power or move closer, unless willing to accept no greater protection than the station had enjoyed under its original operating parameters. Because the trunked system would have one year within which to complete loading to the standard, the conventional station would not be permitted to add mobile units for one year from the date that the trunked system was authorized.

Currently, the loading standard for Business Radio Service channels is 90 units. Kay does not suggest any change in that standard. However, to provide an impetus to trunked operation, and ultimately to reduce the required level of regulatory effort, Kay recommends that the Commission amend its loading rules, as follows: Where an entity proposing to merge channels into a trunked system has in service at least 70 percent of the number of mobile units required to retain exclusive use of the channel, and there is no other station sharing the channel within a 40 mile radius, the Commission should permit the channel to be converted to trunked operation and should allow the licensee to retain exclusive use of the channel, provided that the licensee achieves full loading on the channel within 12 months of the date of trunked system authorization.

If an operator decided to proceed to trunked system operation under the suggested "70 percent option", but failed to meet the loading standard within 12 months of trunked system license grant, the Commission should assess system loading at that date and should recover channels from the trunked system to the point that the remaining channels were loaded to the standard number of units.⁸

⁸ While this would provide some degree of risk to the operator, Kay notes that most of the urban areas in which channels are assigned under Subpart L are large, highly active markets. Practical experience shows that increasing loading from 70 to 90 units would require the operator to add no more than three to four additional eligible end users to the channel. Accordingly, Kay expects that most operators electing the proceed

Licensing Matters

Although the Commission has twice considered and rejected "fleet licensing" for SMR systems above 800 MHz, the Commission currently authorizes private carriers in the 470-512 MHz band to operate and be responsible for all elements of the system, including control stations, temporary control stations, and mobile units. The Commission should build upon its experience with private carrier fleet licensing in the 470-512 MHz band and authorize trunked systems in the MHz band under the existing fleet licensing plan.

When the Commission adopted its Rules for operation above 800 MHz, no stations existed and there was no assurance that commercial operators would move swiftly to make good use of the spectrum to be allocated. Accordingly, the Commission may have been well justified in adopting a mode of licensing in which authorization for various elements of the system was divided between the entrepreneur and end users. In contrast to the absence of experience at the outset of 800 MHz band use, the Commission has clearly seen great demand for use of the 470-512 MHz band. Based on that experience, it has authorized private carriers to operate in the band on a fleet licensing basis. Because extensive use of the band for private land mobile operation is already a matter of record with the Commission, the

under the 70-unit option would be successful in meeting the standard loading within the time suggested.

Commission should carry forward to authorize trunked systems in the band on a fleet licensing basis.

The administrative convenience which the fleet licensing mode provides the Commission in regulating the band should be continued. Kay's experience in converting community repeaters to private carrier operation in the band typifies the efficiency which the Commission should enjoy by allowing trunked operation on a fleet licensing basis. The conversion of each of Kay's community repeaters to private carrier operation has resulted in the cancellation of from two to ten end user licenses and the consolidation of numerous authorizations to one document. The Commission will continue to benefit from fleet licensing into the future as the number of renewal applications which it must handle is also reduced.⁹

Kay believes that the Commission has not encountered any significant difficulty in maintaining its control sheets (that is, loading records) for the 470-512 MHz band under the fleet licensing of private carriers. If it expected any uncertainty, the Commission could request loading information from private

⁹ Further, since the private carrier may be authorized for the number of mobile units which it expects to place in service during the coming eight months, the Commission need not handle a series of modification applications as various end users change the number of mobile units which they operate, leave and return to systems, change mailing addresses, undergo transfers of control or sell business assets.

carriers on an as-needed basis, could require private carriers to report their loading to the Commisison regularly, or could rely on the frequency coordinating committees to assure that stations had reported their loading in a manner sufficient to facilitate continued coordination of the frequencies.

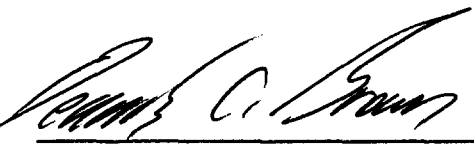
Frequency Coordination

Since the certified frequency coordinating committees already have the information necessary to coordinate applications in the 470-512 MHz band, Kay suggests that the Commission continue to apply its frequency coordination Rules to applications for trunked systems to operate in the band. The coordinating committees should have no difficulty making appropriate adjustments in their data bases and processing methods to accommodate the rule amendments which Kay suggests.

Conclusion

For all the foregoing reasons, Kay respectfully requests that the Commission initiate a rule making proceeding looking toward adoption of the rule amendments suggested herein.

Respectfully submitted,
JAMES A. KAY, JR.

By 
Dennis C. Brown
His Attorney

BROWN AND SCHWANINGER
1919 Pennsylvania Avenue, N.W.
Suite 504
Washington, D.C. 20006
202/223-8837

Dated: March 13, 1991

SUGGESTED RULE AMENDMENTS:

90.312 Mode of operation. Channels allocated under this subpart may be authorized for operation in a conventional or a trunked mode.

(a) Each applicant for a trunked system shall furnish a functional system diagram illustrating the inter-relationship of all stations being applied for, together with technical details including antenna height (AAT), effective radiated power (ERP), the proposed area of coverage, the signalling methods to be employed, and how interference with any existing co-channel station within a 40 mile radius will be prevented.

90.313 * * *

(d) A base station which has mobile units in service equalling at least 70 percent of the standard may be authorized to operate in a trunked mode, provided that no other base station is authorized within a 40 mile radius on the same frequency. A base station which is authorized to commence trunked operation with less than the number of mobile units required to retain exclusive use of the channel shall meet the loading standard within 12 months of the date that trunked operation is

authorized. If a trunked system fails to meet the loading standard within 12 months of the date of authorization of trunked operation, authorization for channels not loaded to the standard cancels automatically.

90.316 Interference protection for trunked systems.

(a) A trunked station shall take reasonable precautions in accord with Rule Section 90.403(e) to prevent causing harmful interference to any co-channel base station situated within 40 miles.

(b) A base station situated within 40 miles of a co-channel trunked station shall take reasonable precautions in accord with Rule Section 90.403(e) to avoid causing harmful interference to any such trunked station.

(c) The ordinary separation between a trunked station which has exclusive use of a channel within a 70 mile radius at the time that trunked operation was authorized and any co-channel base station shall be 70 miles, except that the separation shall be 105 miles between a co-channel trunked station located at any of the following mountain top sites which has exclusive use of a channel within a 105 mile radius at the time that trunked

operation was authorized: Mt. Wilson, Santiago Peak, Sierra Peak, Mt. Lukens (California).

(d) No base station located within a radius of more than 40 miles and less than 70 miles from any co-channel trunked station shall be operated so as to cause the base station's 40 dBμ contour to overlap the 30 dBμ contour of any such trunked station.